

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-30. (Canceled)

31. (Currently Amended) An exposure method in which an exposure processing of a specific process is performed to each of a plurality of photosensitive objects in a plurality of lots, said the method comprising:

a first process in which, with respect to a first lot in the specific process,

calculating an estimate values value of positional information of each of a plurality of divided areas on the photosensitive object, which is used to align each of a plurality of divided areas on a photosensitive object with a predetermined point point, are calculated by a statistical computation, computation using actual measurement values of positional information of a plurality of specific divided areas selected from said the plurality of divided areas on said the photosensitive object object,

creating correction information used to correct, and

a second process in which, with respect to a plurality of measurement divided areas on said photosensitive object including at least said plurality of specific divided areas, a non-linear component of positional deviation amount of each of the plurality of divided areas from an individual fiducial position of each of said plurality of measurement divided areas is calculated respectively at predetermined intervals, based on an the actual measurement value values of positional information of each of said the plurality of measurement specific divided areas and on each of said the corresponding estimate values, value, and

performing exposure while controlling a position of the photosensitive object based on the estimate value of the positional information of each of the plurality of divided areas and on the correction information; said predetermined intervals being one of

~~intervals of a predetermined number of said photosensitive objects and intervals of a predetermined period of time; and~~

with respect to every (K-1) lot of second and subsequent lots in the specific process, for a plurality of measurement divided areas on the photosensitive object that includes at least the plurality of specific divided areas,

calculating judgment is made about the necessity of updating correction information based on magnitude of one of
said non-linear component of positional deviation amount calculated of each of said plurality of measurement divided areas, and
a variation amount of the non-linear component, said correction information being used to correct a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position of each of said plurality of divided areas on said photosensitive object based on an actual measurement value of positional information of each of the measurement divided areas and on the corresponding estimate value.

updating the correction information as needed in accordance with a magnitude of one of the calculated non-linear component of positional deviation amount of each of the measurement divided areas and a variation amount of the non-linear component, but not updating the correction information with respect to the remaining lots, and

performing exposure while controlling the position of the photosensitive object based on the estimate value of positional information of each of the plurality of divided areas and on the correction information that is latest,

wherein the K is an integer not less than 2.

32. (Canceled)

33. (Currently Amended) The exposure method of Claim 3231, wherein

~~in said third process, when the update processing of said updating the~~
~~correction information is performed,~~

among ~~said~~the plurality of divided areas, at least a part of remaining divided areas excluding ~~said~~the plurality of ~~the~~ measurement divided areas are ~~to be~~ new measurement divided areas, and

~~said~~the correction information is updated using a non-linear component of positional deviation amount of each of the plurality of divided areas from ~~said~~the individual fiducial position ~~of each of said plurality of divided areas~~ calculated based on actual measurement values of positional information of all measurement divided areas including the new measurement divided areas and on ~~said~~the corresponding estimate values.

34. (Currently Amended) The exposure method of ~~Claim 33~~Claim 33, wherein ~~said~~the new measurement divided areas are determined based on evaluation results of ~~said~~the non-linear component of positional deviation amount of each of ~~said~~the plurality of divided areas included in ~~said~~the correction information before update.

35. (Currently Amended) The exposure method of ~~Claim 33~~Claim 33, wherein ~~said~~the new measurement divided areas are determined based on evaluation results of one of ~~said~~the non-linear component of positional deviation amount of each of ~~said~~the plurality of ~~the~~ measurement divided areas calculated with respect to the every (K-1) lot in ~~said second process and a~~the variation amount of the non-linear component.

36. (Canceled)

37. (Currently Amended) The exposure method of ~~Claim 31~~Claim 31, wherein as ~~said~~the plurality of measurement divided areas on ~~said~~the photosensitive object, only ~~said~~the plurality of specific divided areas can be designated.

38. (Currently Amended) The exposure method of ~~Claim 31~~Claim 31, wherein

as saidthe plurality of measurement divided areas on saidthe photosensitive object, at least a part of remaining divided areas can be designated in addition to saidthe plurality of specific divided areas.

39. (Currently Amended) The exposure method of Claim 31Claim 31, wherein saidthe correction information is one of a correction map and a correction function.

40-41. (Canceled)

42. (Currently Amended) The exposure method of Claim 4135, wherein the evaluation of saidthe non-linear component of positional deviation amount of each of saidplurality of the measurement divided areas is performed, taking into consideration at least one of magnitude and a dispersion degree of saidthe non-linear component of positional deviation amount of each of saidplurality of the measurement divided areas in saidthe correction information before update.

43. (Currently Amended) The exposure method of Claim 4135, wherein the evaluation of saidthe non-linear component of positional deviation amount of each of saidplurality of the measurement divided areas is performed, using a predetermined evaluation function.

44. (Currently Amended) The exposure method of Claim 4135, wherein saidthe plurality of divided areas on saidthe photosensitive object are grouped into a plurality of blocks in advance, and the evaluation of saidthe non-linear component of positional deviation amount of each of saidplurality of the measurement divided areas is performed with respect to each block.

45-48. (Canceled)

49. (Currently Amended) A device manufacturing method including a lithographic process wherein

in said~~the~~ lithographic process, an exposure processing of a specific process is continuously or intermittently performed to each of ~~a plurality of~~ photosensitive objects in a plurality of lots by using the exposure method of Claim-41 31.

50. (Currently Amended) An exposure apparatus that performs an exposure processing of a specific process to each of ~~a plurality of~~ photosensitive objects in a plurality of lots, said~~the~~ apparatus comprising:

a moving body that holds a photosensitive object;

a detection system that detects actual measurement values of positional information of any divided areas among a plurality of divided areas on said~~the~~ photosensitive object held on said~~the~~ moving body;

a computation unit~~device~~ that calculates an estimate ~~values-value~~ of positional information of each of the plurality of divided areas, which is used to align each of said~~the~~ plurality of divided areas with a predetermined point point, by a statistical computation, computation using actual measurement values of positional information of a plurality of specific divided areas among said~~the~~ plurality of divided areas on said~~the~~ photosensitive object detected by said~~the~~ detection system;

a judgment unit creating device that, with respect to a first lot in the specific process, a plurality of measurement divided areas on said photosensitive object including at least said plurality of specific divided areas, creates correction information used to correct calculates a non-linear component of positional deviation amount of each of the plurality of divided areas from an individual fiducial position of each of said plurality of measurement divided areas respectively at predetermined intervals, based on an the actual measurement values of positional information of each of said the plurality of measurement specific divided areas among the plurality of divided areas on the photosensitive object detected by

~~said~~the detection system and ~~each of said~~on the corresponding estimate values of positional information calculated by ~~said~~the computation ~~unit~~device;

~~, said intervals are one of intervals of a predetermined number of said photosensitive objects and intervals of a predetermined period of time, and~~

~~judges the necessity of updating correction information based on magnitude of one of said non-linear component of positional deviation amount calculated for each of said plurality of measurement divided areas and a variation amount of the non-linear component, said correction information being used to correct a non-linear component of positional deviation amount from an individual fiducial position of each of said plurality of divided areas on said photosensitive object;~~

~~an updating ~~unit~~device that, with respect to every (K-1) lot of second and subsequent lots in the specific process, for a plurality of measurement divided areas on the photosensitive object that includes at least the plurality of specific divided areas, performs a processing to update said correction information when said judgment unit judges that update is necessary; and~~

~~calculates a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position based on an actual measurement value of positional information of each of the measurement divided areas detected by the detection device and on the corresponding estimate value, and~~

~~updates the correction information as needed in accordance with a magnitude of one of the calculated non-linear component of positional deviation amount of each of the measurement divided areas and a variation amount of the non-linear component, but does not update the correction information with respect to the remaining lots, wherein the K is an integer not less than 2; and~~

a control unitdevice that controls a position of saidthe photosensitive object via saidthe moving body based on the estimate value of positional information of each of saidthe plurality of divided areas and saidonthe correction information that is latest, when exposing each of saidthe plurality of divided areas.

51. (Currently Amended) The exposure apparatus of Claim 50Claim 50, wherein

saidthe updating unitdevice comprises:

a determining unitdevice that determines at least a part of remaining divided areas excluding saidpluralityofthe measurement divided areas among saidthe plurality of divided areas on saidthe photosensitive object, as new measurement divided areas; and

a calculating unitdevice that calculates atthe non-linear component of positional deviation amount ofeachofthe plurality of divided areas onthe photosensitive object from saidthe individual fiducial positionofeachofsaidpluralityofdividedareasonsaidphotosensitiveobjectposition, as new correction information, based on actual measurement values of positional information of all measurement divided areas including actual measurement values of positional information of the new measurement divided areas detected by saidthe detection system and on saidthe corresponding estimatevaluesvalue.

52. (Currently Amended) The exposure apparatus of Claim 51Claim 51, wherein

saidthe determining unitdevice determines saidthe new measurement divided areas based on evaluation results of one of saidthe non-linear component of positional deviation amount of each of saidpluralityofthe measurement divided areas calculated by saidjudgmentunittheupdatingdevice and atthe variation amount of the non-linear component.

53. (Canceled)

54. (Currently Amended) The exposure apparatus of Claim 50, wherein

a first mode in which only saidthe plurality of specific divided areas are designated as saidthe plurality of measurement divided areas on saidthe photosensitive object, and

a second mode in which saidthe plurality of specific divided areas and at least a part of remaining divided areas are designated as saidthe plurality of measurement divided areas on saidthe photosensitive object are settable.

55. (Currently Amended) The exposure apparatus of Claim 50Claim 50, wherein saidthe correction information is one of a correction map and a correction function.

56. (Currently Amended) AnThe exposure apparatus of Claim 51, that performs an exposure processing of a specific process to each of a plurality of photosensitive objects, said apparatus further comprising:

_____ a moving body that holds a photosensitive object;
_____ a detection system that detects actual measurement values of positional information of any divided areas on said photosensitive object held on said moving body;
_____ a computation unit that calculates estimate values of positional information used to align each of a plurality of divided areas with a predetermined point by a statistical computation, using actual measurement values of positional information of a plurality of specific divided areas among said plurality of divided areas on said photosensitive object detected by said detection system;

an evaluation unitdevice that, with respect to a plurality of measurement divided areas on saidthe photosensitive object including at least saidthe plurality of specific divided areas, evaluates a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position of each of said plurality of measurement divided areas at predetermined intervals, based on anthe actual measurement

value of positional information of each of said plurality of the measurement divided areas detected by said the detection system and each of said on the estimate values value of positional information calculated by said the computation device unit, said predetermined intervals being one of intervals of a predetermined number of said photosensitive objects and intervals of a predetermined period of time, and determines at least one of the number of new measurement divided areas to be added and an arrangement thereof, based on the evaluation results; results.

an updating unit that updates correction information related to a non-linear component of positional deviation amount from an individual fiducial position of each of said plurality of divided areas on said photosensitive object, using said non-linear component of positional deviation amount of each of said plurality of divided areas on said photosensitive object, said non-linear component of positional deviation amount being calculated based on actual measurement values of positional information of all measurement divided areas including actual measurement values of positional information of the new measurement divided areas detected by said detection system and on said estimate values; and

a control unit that controls a position of said photosensitive object via said moving body based on the estimate value of positional information of each of said plurality of divided areas calculated by said computation unit and said correction information that is latest, when exposing each of said plurality of divided areas.

57. (Currently Amended) The exposure apparatus of Claim 56 Claim 56, wherein said the plurality of divided areas on said the photosensitive object are grouped into a plurality of blocks in advance, and

said the evaluation unit device performs the evaluation of said the non-linear component of positional deviation amount of each of said plurality of the measurement divided areas with respect to each block.

58-60. (Canceled)

61. (Currently Amended) A computer readable medium that stores a program that makes a computer for control of an exposure apparatus that performs an exposure processing of a specific process to each of ~~a plurality of~~ photosensitive objects in a plurality of lots execute a predetermined processing, ~~said~~the program making ~~said~~the computer execute: a procedure in which of, with respect to a first lot in the specific process, calculating an estimate values-value of positional information of each of a plurality of divided areas on a photosensitive object, which is used to align each of a the plurality of divided areas on a photosensitive object with a predetermined point point, are calculated by a statistical computation using actual measurement values of positional information of a plurality of specific divided areas selected from saidthe plurality of divided areas on saidthe photosensitive object; andobject, creating correction information used to correct a procedure in which, with respect to a plurality of measurement divided areas on said photosensitive object including at least said plurality of specific divided areas, a non-linear component of positional deviation amount of each of the plurality of divided areas from an individual fiducial position of each of said plurality of measurement divided areas is calculated respectively at predetermined intervals, based on anthe actual measurement valuevalues of positional information of each of saidthe plurality of measurement specific divided areas and on each of saidthe estimate values, said predetermined intervals being one of intervals of a predetermined number of saidthe photosensitive objects and intervals of a predetermined period of time, value, and performing exposure while controlling a position of the photosensitive object based on the estimate value of positional information of each of the plurality of divided areas and on the correction information; and

a procedure of, with respect to every (K-1) lot of second and subsequent lots in the specific process, for a plurality of measurement divided areas on the photosensitive object that include at least the plurality of specific divided areas,

calculating a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position based on an actual measurement value of positional information of each of the measurement divided areas and on the estimate value,

updating the correction information as needed in accordance with a magnitude of one of the calculated non-linear component of positional deviation amount of each of the measurement divided areas and a variation amount of the non-linear component, but not updating the correction information with respect to the remaining lots, and

performing exposure while controlling the position of the photosensitive object based on the estimate value of positional information of each of the plurality of divided areas and on the correction information that is latest,

wherein the K is an integer not less than 2.

judgment is made about the necessity of updating correction information based on magnitude of one of said non-linear component of positional deviation amount calculated for each of said plurality of measurement divided areas and a variation amount of the non-linear component, said correction information being used to correct a non-linear component of positional deviation amount from an individual fiducial position of each of said plurality of divided areas on said photosensitive object.

62. (Canceled)